

Accuracy of CO₂ Emissions Estimates for the United States

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Accurate accounting of CO₂ emissions is required for carbon cycle modeling and for the assessment of success of strategies and tactics to reduce CO₂ emissions from fossil-fuel combustion. We have undertaken a detailed review of the U.S. emissions estimates and the data behind them. All U.S. estimates rely on energy data collected by the U.S. Department of Energy, but we focus on differences that arise from treatment of these data to arrive at carbon emissions estimates. Important sources of differences include the use of “consumption” versus “apparent consumption,” the treatment of non-fuel uses of petroleum products, and the conversion of fossil-fuel data in mass and volume units to energy units, and finally from energy units to carbon in mass units. The Carbon Dioxide Information Analysis Center (CDIAC) and the U.S. Environmental Protection Agency (EPA) now agree within 1% on national emissions totals from fossil-fuel combustion (not including gas flaring or bunker fuels) since 1990 (Figure 1). There are still occasional differences of up to 3% for individual states, but the inaccuracies involved do not seem large enough to preclude conclusive results from studies comparing or contrasting fuel-combustion patterns and practices in the various states. State-by-state data for years 1960-2000 are now available on the CDIAC web site (<http://cdiac.esd.ornl.gov>). Per capita emissions data are also available. States that are well above (below) average in per capita emissions are often net producers (consumers) of electricity; this shows up primarily in emissions from coal combustion. We especially thank Karoly Kovacs of the United Nations Statistics Division, Energy and Industry Statistics Section; Julia Hutchins, Roy Kass, and Jonathan Cogan of the U.S. Department of Energy, Energy Information Administration, and Andrea Denny and Perry Lindstrom of the U.S. Environmental Protection Agency for their dedication and cooperation in this endeavor.

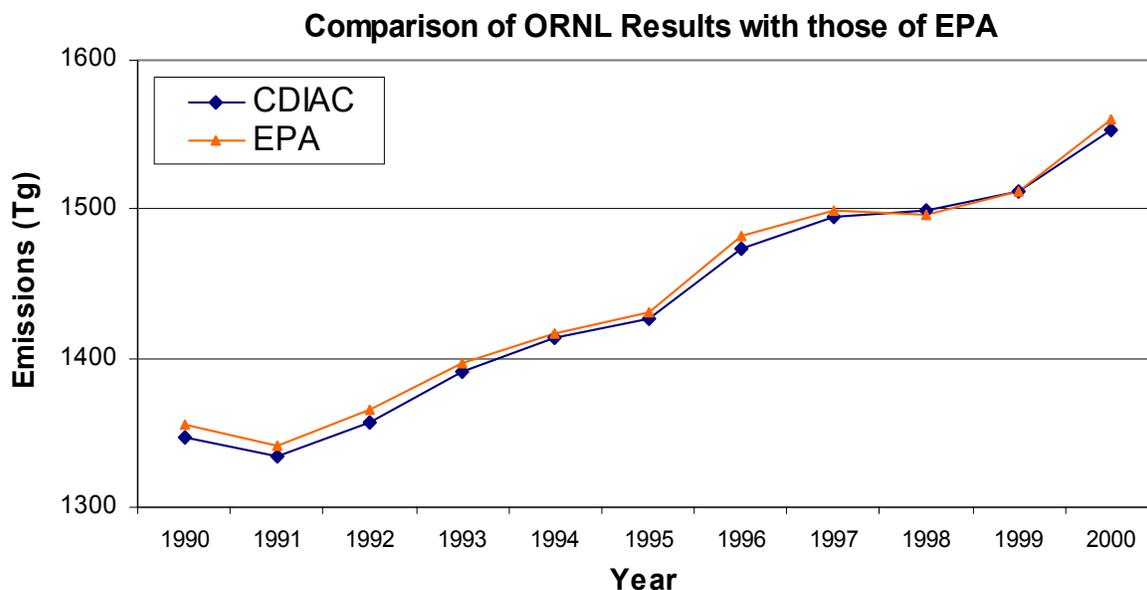


Figure 1. National CO₂ emissions summed from the state totals. The EPA web site indicates estimates based on preliminary data that have not been corrected, although they are still on the EPA global warming web site.